

Claims

What is claimed is:

- 5 1. A high-frequency power amplifier having differential inputs, comprising:
- a power supply unit;
 - a first amplification circuit unit for amplifying high-frequency differential input signals of differential input terminals INA, INB into
10 outputting a single high-frequency signal;
 - an intermediate impedance matching unit for impedance-matching the single high-frequency signal amplified by the first amplification circuit unit;
 - a second amplification circuit unit for receiving and amplifying the
15 impedance-matched single high-frequency signal from the intermediate impedance matching unit and outputting the amplified signal to an antenna through an output terminal thereof ;
 - a power control circuit unit for controlling a power output to the antenna through the output terminal of the second amplification circuit unit
20 by varying a voltage of a power control terminal;
 - a first bias circuit unit for determining an operation reference point of the first amplification circuit unit; and
 - a second bias circuit unit for determining an operation reference point of the second amplification circuit unit.

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2. A high-frequency power amplifier having differential inputs according to claim 1, further comprising a power breaking circuit unit for breaking the power output to the antenna through the output terminal of the second amplification circuit unit when a voltage of a power breaking
5 terminal becomes a ground voltage.

3. A high-frequency power amplifier having differential inputs according to claim 1, wherein the first amplification circuit unit comprises a plurality of amplification elements for amplifying signals input from the
10 differential input terminals; and a negative feedback inductor for stabilizing a frequency response of a differential amplification circuit.

4. A high-frequency power amplifier having differential inputs according to claim 1, wherein the second amplification circuit unit
15 comprises one or more amplification elements and one or more elements for decreasing an output harmonic component of the second amplification circuit unit.

5. A high-frequency power amplifier having differential inputs according to claim 1, wherein the intermediate impedance matching unit
20 comprises one or more intermediate impedance matching elements and impedance elements.

6. A high-frequency power amplifier having differential inputs according to claim 1, wherein the power breaking circuit unit comprises a
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power breaking element, a rectification element a plurality of a voltage distributing elements, and a plurality of voltage-controlled current sources.

7. A high-frequency power amplifier having differential inputs
5 according to claim 1, wherein the power controlling circuit unit comprises a power controlling terminal, a rectification element, a plurality of bias elements, a plurality of elements for determining decrement in a power, a plurality of amplification elements, and a plurality of impedance elements.

10 8. A high-frequency power amplifier having differential inputs according to claim 1, wherein the first and the second bias circuit units comprise a bias current mirror circuit for compensating for variation in a current gain.